

SEQUENCE LISTING

5 <110> MARTIN, ANNETTE
 SANGAR, DAVID V.
 LEMON, STANLEY M.
 RIJNBRAND, RENE

10 <120> Chimeric GB Virus B (GBV-B)

15 <130> UTEFG:258WO

15 <140> UNKNOWN
 <141> 2003-07-02

20 <150> 10/189.359
 <151> 2002-07-03

20 <160> 16

25 <170> PatentIn Ver. 2.1

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 <212> RNA
 <213> Unknown

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20	ttt gcg tgg tat ctg aag ggt agg tgg gtg ccc gga gcg gtc tac gcc Phe Ala Trp Tyr Leu Lys Gly Arg Trp Val Pro Gly Ala Val Tyr Ala 775 780 785	2708
25	ctc tac ggg atg tgg cct ctc ctc ctg ctg ctg gcg ttg cct cag Leu Tyr Gly Met Trp Pro Leu Leu Leu Leu Leu Ala Leu Pro Gln 790 795 800 805	2756
30	cgg gca tac gca ctg gac acg gag gtg gcc gcg tcg tgt ggc ggc gtt Arg Ala Tyr Ala Leu Asp Thr Glu Val Ala Ala Ser Cys Gly Gly Val 810 815 820	2804
35	gtt ctt gtc ggg tta atg gcg ctg act ctg tcg cca tat tac aag cgc Val Leu Val Gly Leu Met Ala Leu Thr Leu Ser Pro Tyr Tyr Lys Arg 825 830 835	2852
40	tat atc agc tgg tgc atg tgg tgg ctt cag tat ttt ctg acc aga gta Tyr Ile Ser Trp Cys Met Trp Trp Leu Gln Tyr Phe Leu Thr Arg Val 840 845 850	2900
45	gaa gcg caa ctg cac gtg tgg gtt ccc ccc ctc aac gtc cgg ggg ggg Glu Ala Gln Leu His Val Trp Val Pro Pro Leu Asn Val Arg Gly Gly 855 860 865	2948
50	cgc gat gcc gtc atc tta ctc atg tgt gta gta cac ccg acc ctg gta Arg Asp Ala Val Ile Leu Leu Met Cys Val Val His Pro Thr Leu Val 870 875 880 885	2996
55	ttt gac atc acc aaa cta ctc ctg gcc atc ttc gga ccc ctt tgg att Phe Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe Gly Pro Leu Trp Ile 890 895 900	3044
60	ctt caa gcc agt ttg ctt aaa gtc ccc tac ttc gtg cgc gtt caa ggc Leu Gln Ala Ser Leu Leu Lys Val Pro Tyr Phe Val Arg Val Gln Gly 905 910 915	3092
65	ctt ctc cgg atc tgc gcg cta gcg cgg aag ata gcc gga ggt cat tac Leu Leu Arg Ile Cys Ala Leu Ala Arg Lys Ile Ala Gly Gly His Tyr 920 925 930	3140
	gtg caa atg gcc atc atc aag tta ggg gcg ctt act ggc acc tat gtg Val Gln Met Ala Ile Ile Lys Leu Gly Ala Leu Thr Gly Thr Tyr Val 935 940 945	3188
	tat aac cat ctc acc cct ctt cga gac tgg gcg cac aac ggc ctg cga Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala His Asn Gly Leu Arg 950 955 960 965	3236
	gat ctg gcc gtg gct gtg gaa cca gtc gtc ttc tcc cga atg gag acc Asp Leu Ala Val Ala Val Glu Pro Val Val Phe Ser Arg Met Glu Thr 970 975 980	3284
	aag ctc atc acg tgg ggg gca gat acc gcc gcg tgc ggt gac atc atc	3332

	Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile	
	985 990 995	
5	aac ggc ttg ccc gtc tct gcc cgt agg ggc cag gag ata ctg ctt ggg Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Gln Glu Ile Leu Leu Gly	3380
	1000 1005 1010	
10	cca gcc gac gga atg gtc tcc aag ggg tgg agg ttg ctg gcg ccc atc Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu Leu Ala Pro Ile	3428
	1015 1020 1025	
15	acg gcg tac gcc cag cag acg aga ggc ctc cta ggg tgt ata atc acc Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr	3476
	1030 1035 1040 1045	
20	agc ctg act ggc cgg gac aaa aac caa gtg gag ggt gag gtc cag atc Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Ile	3524
	1050 1055 1060	
25	gtg tca act gct acc caa acc ttc ctg gca acg tgc atc aat ggg gta Val Ser Thr Ala Thr Gln Thr Phe Leu Ala Thr Cys Ile Asn Gly Val	3572
	1065 1070 1075	
30	tgc tgg act gtc tac cac ggg gcc gga acg agg acc atc gca tca ccc Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro	3620
	1080 1085 1090	
35	aag ggt cct gtc atc cag atg tat acc aat gtg gac caa gac ctt gtg Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val	3668
	1095 1100 1105	
40	ggc tgg ccc gct cct caa ggt tcc cgc tca ttg aca ccc tgt acc tgc Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu Thr Pro Cys Thr Cys	3716
	1110 1115 1120 1125	
45	ggc tcc tcg gac ctt tac ctg gtc acg agg cac gcc gat gtc att ccc Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro	3764
	1130 1135 1140	
50	gtg cgc cgg cga ggt gat agc agg ggt agc ctg ctt tcg ccc cgg ccc Val Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro	3812
	1145 1150 1155	
55	att tcc tac ttg aaa ggc tcc tcg ggg ggt ccg ctg ttg tgc ccc gcg Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ala	3860
	1160 1165 1170	
60	gga cac gcc gtg ggc cta ttc agg gcc gcg gtg tgc acc cgt gga gtg Gly His Ala Val Gly Leu Phe Arg Ala Ala Val Cys Thr Arg Gly Val	3908
	1175 1180 1185	
65	gct aaa gcg gtg gac ttt atc cct gtg gag aac cta ggg aca acc atg Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Gly Thr Thr Met	3956
	1190 1195 1200 1205	
	aga tcc ccg gtg ttc acg gac aac tcc tct cca cca gca gtg ccc cag Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Ala Val Pro Gln	4004
	1210 1215 1220	
	agc ttc cag gtg gcc cac ctg cat gct ccc acc ggc agc ggt aag agc Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser	4052
	1225 1230 1235	
	acc aag gtc ccg gct gcg tac gca gcc cag ggc tac aag gtg ttg gtg Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val	4100
	1240 1245 1250	

5	ctc aac ccc tct gtt gct gca acg ctg ggc ttt ggt gct tac atg tcc Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser 1255 1260 1265	4148
10	aag gcc cat ggg gtt gat cct aat atc agg acc ggg gtg aga aca att Lys Ala His Gly Val Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile 1270 1275 1280 1285	4196
15	acc act ggc agc ccc atc acg tac tcc acc tac ggc aag ttc ctt gcc Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala 1290 1295 1300	4244
20	gac ggc ggg tgc tca gga ggt gct tat gac ata ata att tgt gac gag Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu 1305 1310 1315	4292
25	tgc cac tcc acg gat gcc aca tcc atc ttg ggc atc ggc act gtc ctt Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu 1320 1325 1330	4340
30	gac caa gca gag act gcg ggg gcg aga ctg gtt gtc gcc act gct Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala 1335 1340 1345	4388
35	acc cct ccg ggc tcc gtc act gtg tcc cat cct aac atc gag gag gtt Thr Pro Pro Gly Ser Val Thr Val Ser His Pro Asn Ile Glu Glu Val 1350 1355 1360 1365	4436
40	gct ctg tcc acc acc gga gag atc ccc ttt tac ggc aag gct atc ccc Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro 1370 1375 1380	4484
45	ctc gag gtg atc aag ggg gga aga cat ctc atc ttc tgc cac tca aag Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys 1385 1390 1395	4532
50	aag aag tgc gac gag ctc gcc gcg aag ctg gtc gca ttg ggc atc aat Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn 1400 1405 1410	4580
55	gcc gtg gcc tac tac cgc ggt ctt gac gtg tct gtc atc ccg acc agc Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser 1415 1420 1425	4628
60	gac gat gtt gtc gtc gtg tcg acc gat gct ctc atg act ggc ttt acc Gly Asp Val Val Val Ser Thr Asp Ala Leu Met Thr Gly Phe Thr 1430 1435 1440 1445	4676
65	ggc gac ttc gac tct gtg ata gac tgc aac acg tgt gtc act cag aca Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr 1450 1455 1460	4724
	gtc gat ttc agc ctt gac cct acc ttt acc att gag aca acc acg ctc Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Thr Leu 1465 1470 1475	4772
	ccc cag gat gct gtc tcc agg act caa cgc cgg ggc agg act ggc agg Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg 1480 1485 1490	4820
	ggg aag cca ggc atc tat aga ttt gtg gca ccg ggg gag cgc ccc tcc Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser 1495 1500 1505	4868
	ggc atg ttc gac tcg tcc gtc ctc tgt gag tgc tat gac gcg ggc tgt	4916

	Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys		
1510	1515	1520	1525
5	gct tgg tat gag ctc acg ccc gcc gag act aca gtt agg cta cga gcg Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala	4964	
	1530	1535	1540
10	tac atg aac acc ccg ggg ctt ccc gtg tgc cag gac cat ctt gaa ttt Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe	5012	
	1545	1550	1555
15	tgg gag ggc gtc ttt acg ggc ctc act cat ata gat gcc cac ttt tta Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu	5060	
	1560	1565	1570
20	tcc cag aca aag cag agt ggg gag aac ttt cct tac ctg gta gcg tac Ser Gln Thr Lys Gln Ser Gly Glu Asn Phe Pro Tyr Leu Val Ala Tyr	5108	
	1575	1580	1585
25	caa gcc acc gtg tgc gct agg gct caa gcc cct ccc cca tcg tgg gac Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp	5156	
	1590	1595	1600
	1605		
30	cag atg tgg aag tgt ttg atc cgc ctt aaa ccc acc ctc cat ggg cca Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro	5204	
	1610	1615	1620
35	aca ccc ctg cta tac aga ctg ggc gct gtt cag aat gaa gtc acc ctg Thr Pro Leu Leu Tyr Arg Leu Gly Ala Val Gln Asn Glu Val Thr Leu	5252	
	1625	1630	1635
40	acg cac cca atc acc aaa tac atc atg aca tgc atg tcg gcc gac ctg Thr His Pro Ile Thr Lys Tyr Ile Met Thr Cys Met Ser Ala Asp Leu	5300	
	1640	1645	1650
45	gag gtc gtc acg agc acc tgg gtg ctc gtt ggc ggc gtc ctg gct gct Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala	5348	
	1655	1660	1665
50	ctg gcc gcg tat tgc ctg tca aca ggc tgc gtg gtc ata gtg ggc agg Leu Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg	5396	
	1670	1675	1680
	1685		
55	atc gtc ttg tcc ggg aag ccg gca att ata cct gac agg gag gtt ctc Ile Val Leu Ser Gly Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu	5444	
	1690	1695	1700
60	tac cag gag ttc gat gag atg gaa gag tgc tct cag cac tta ccg tac Tyr Gln Glu Phe Asp Glu Met Glu Glu Cys Ser Gln His Leu Pro Tyr	5492	
	1705	1710	1715
65	atc gag caa ggg atg atg ctc gct gag cag ttc aag cag aag gcc ctc Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln Lys Ala Leu	5540	
	1720	1725	1730
	1735	1740	1745
70	ggc ctc ctg cag acc gcg tcc cgc cat gca gag gtt atc acc cct gct Gly Leu Leu Gln Thr Ala Ser Arg His Ala Glu Val Ile Thr Pro Ala	5588	
	1750	1755	1760
	1765		
75	gtc cag acc aac tgg cag aaa ctc gag gtc ttt tgg gcg aag cac atg Val Gln Thr Asn Trp Gln Lys Leu Glu Val Phe Trp Ala Lys His Met	5636	
	1770	1775	1780
	1785		

5	cct ggt aac ccc gcc att gct tca ttg atg gct ttt aca gct gcc gtc Pro Gly Asn Pro Ala Ile Ala Ser Leu Met Ala Phe Thr Ala Ala Val 1785 1790 1795	5732
10	acc agc cca cta acc act ggc caa acc ctc ctc ttc aac ata ttg ggg Thr Ser Pro Leu Thr Thr Gly Gln Thr Leu Leu Phe Asn Ile Leu Gly 1800 1805 1810	5780
15	ggg tgg gtg gct gcc cag ctc gcc ccc ggt gcc gct act gcc ttt Gly Trp Val Ala Ala Gln Leu Ala Ala Pro Gly Ala Ala Thr Ala Phe 1815 1820 1825	5828
20	gtg ggt gct ggc cta gct ggc gcc atc ggc agc gtt gga ctg ggg Val Gly Ala Gly Leu Ala Gly Ala Ile Gly Ser Val Gly Leu Gly 1830 1835 1840 1845	5876
25	aag gtc ctc gtg gac att ctt gca ggg tat ggc gcg ggc gtg gcg gga Lys Val Leu Val Asp Ile Leu Ala Gly Tyr Gly Ala Gly Val Ala Gly 1850 1855 1860	5924
30	gct ctt gta gca ttc aag atc atg agc ggt gag gtc ccc tcc acg gag Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu Val Pro Ser Thr Glu 1865 1870 1875	5972
35	gac ctg gtc aat ctg ctg ccc gcc atc ctc tcg cct gga gcc ctt gta Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser Pro Gly Ala Leu Val 1880 1885 1890	6020
40	gtc ggt gtg gtc tgc gca gca ata ctg cgc cgg cac gtt ggc ccc ggc Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg His Val Gly Pro Gly 1895 1900 1905	6068
45	gag ggg gca gtg caa tgg atg aac cgg cta ata gcc ttc gcc tcc cgg Glu Gly Ala Val Gln Trp Met Asn Arg Leu Ile Ala Phe Ala Ser Arg 1910 1915 1920 1925	6116
50	ggg aac cat gtt tcc ccc acg cac tac gtg ccg gag agc gat gca gcc Gly Asn His Val Ser Pro Thr His Tyr Val Pro Glu Ser Asp Ala Ala 1930 1935 1940	6164
55	gcc cgc gtc act gcc ata ctc agc agc ctc act gta acc cag ctc ctg Ala Arg Val Thr Ala Ile Leu Ser Ser Leu Thr Val Thr Gln Leu Leu 1945 1950 1955	6212
60	agg cga ctg cat cag tgg ata agc tcg gag tgt acc act cca tgc tcc Arg Arg Leu His Gln Trp Ile Ser Ser Glu Cys Thr Thr Pro Cys Ser 1960 1965 1970	6260
65	gtt tcc tgg cta agg gac atc tgg gac tgg ata tgc gag gtg ctg agc Gly Ser Trp Leu Arg Asp Ile Trp Asp Trp Ile Cys Glu Val Leu Ser 1975 1980 1985	6308
	gac ttt aag acc tgg ctg aaa gcc aag ctc atg cca caa ctg cct ggg Asp Phe Lys Thr Trp Leu Lys Ala Lys Leu Met Pro Gln Leu Pro Gly 1990 1995 2000 2005	6356
	att ccc ttt gtg tcc tgc cag cgc ggg tat agg ggg gtc tgg cga gga Ile Pro Phe Val Ser Cys Gln Arg Gly Tyr Arg Gly Val Trp Arg Gly 2010 2015 2020	6404
	gac ggc att atg cac act cgc tgc cac tgt gga gct gag atc act gga Asp Gly Ile Met His Thr Arg Cys His Cys Gly Ala Glu Ile Thr Gly 2025 2030 2035	6452
	cat gtc aaa aac ggg acg atg agg atc gtc ggt cct agg acc tgc agg	6500

	His Val Lys Asn Gly Thr Met Arg Ile Val Gly Pro Arg Thr Cys Arg		
	2040 2045 2050		
5	aac atg tgg agt ggg acg ttc ccc att aac gcc tac acc acg ggc ccc Asn Met Trp Ser Gly Thr Phe Pro Ile Asn Ala Tyr Thr Thr Gly Pro 2055 2060 2065		6548
10	tgt act ccc ctt cct gcg ccg aac tat aag ttc gcg ctg tgg agg gtg Cys Thr Pro Leu Pro Ala Pro Asn Tyr Lys Phe Ala Leu Trp Arg Val 2070 2075 2080 2085		6596
15	tct gca gag gaa tac gtg gag ata agg cgg gtg ggg gac ttc cac tac Ser Ala Glu Glu Tyr Val Glu Ile Arg Arg Val Gly Asp Phe His Tyr 2090 2095 2100		6644
20	gta tcg ggt atg act act gac aat ctt aaa tgc ccg tgc cag atc cca Val Ser Gly Met Thr Thr Asp Asn Leu Lys Cys Pro Cys Gln Ile Pro 2105 2110 2115		6692
25	tcg ccc gaa ttt ttc aca gaa ttg gac ggg gtg cgc cta cac agg ttt Ser Pro Glu Phe Phe Thr Glu Leu Asp Gly Val Arg Leu His Arg Phe 2120 2125 2130		6740
30	gcg ccc cct tgc aag ccc ttg ctg cgg gag gag gta tca ttc aga gta Ala Pro Pro Cys Lys Pro Leu Leu Arg Glu Glu Val Ser Phe Arg Val 2135 2140 2145		6788
35	gga ctc cac gag tac ccc gtg ggg tcg caa tta cct tgc gag ccc gaa Gly Leu His Glu Tyr Pro Val Gly Ser Gln Leu Pro Cys Glu Pro Glu 2150 2155 2160 2165		6836
40	ccg gac gta gcc gtg ttg acg tcc atg ctc act gat ccc tcc cat ata Pro Asp Val Ala Val Leu Thr Ser Met Leu Thr Asp Pro Ser His Ile 2170 2175 2180		6884
45	aca gca gag gcg gcc ggg aga agg ttg gcg aga ggg tca ccc cct tct Thr Ala Glu Ala Gly Arg Arg Leu Ala Arg Gly Ser Pro Pro Ser 2185 2190 2195		6932
50	atg gcc agc tcc tcg gct agc cag ctg tcc gct cca tct ctc aag gca Met Ala Ser Ser Ala Ser Gln Leu Ser Ala Pro Ser Leu Lys Ala 2200 2205 2210		6980
55	act tgc acc gcc aac cat gac tcc cct gac gcc gag ctc ata gag gct Thr Cys Thr Ala Asn His Asp Ser Pro Asp Ala Glu Leu Ile Glu Ala 2215 2220 2225		7028
60	aac ctc ctg tgg agg cag gag atg ggc ggc aac atc acc agg gtt gag Asn Leu Leu Trp Arg Gln Glu Met Gly Gly Asn Ile Thr Arg Val Glu 2230 2235 2240 2245		7076
65	tca gag aac aaa gtg gtg att ctg gac tcc ttc gat ccg ctt gtg gca Ser Glu Asn Lys Val Val Ile Leu Asp Ser Phe Asp Pro Leu Val Ala 2250 2255 2260		7124
	gag gag gat gag cgg gag gtc tcc gta cct gca gaa att ctg cgg aag Glu Glu Asp Glu Arg Glu Val Ser Val Pro Ala Glu Ile Leu Arg Lys 2265 2270 2275		7172
	tct cgg aga ttc gcc cgg gcc ctg ccc gtc tgg gcg cgg cgg gac tac Ser Arg Arg Phe Ala Arg Ala Leu Pro Val Trp Ala Arg Pro Asp Tyr 2280 2285 2290		7220
	aac ccc ccg cta gta gag acg tgg aaa aag cct gac tac gaa cca cct Asn Pro Pro Leu Val Glu Thr Trp Lys Lys Pro Asp Tyr Glu Pro Pro 2295 2300 2305		7268

5	gtg gtc cat ggc tgc ccg cta cca cct cca cgg tcc cct cct gtg cct Val Val His Gly Cys Pro Leu Pro Pro Pro Arg Ser Pro Pro Val Pro 2310 2315 2320 2325	7316
10	ccg cct cgg aaa aag cgt acg gtg gtc ctc acc gaa tca acc cta tct Pro Pro Arg Lys Lys Arg Thr Val Val Leu Thr Glu Ser Thr Leu Ser 2330 2335 2340	7364
15	act gcc ttg gcc gag ctt gcc acc aaa agt ttt ggc agc tcc tca act Thr Ala Leu Ala Glu Leu Ala Thr Lys Ser Phe Gly Ser Ser Ser Thr 2345 2350 2355	7412
20	tcc ggc att acg ggc gac aat acg aca aca tcc tct gag ccc gcc cct Ser Gly Ile Thr Gly Asp Asn Thr Thr Ser Ser Glu Pro Ala Pro 2360 2365 2370	7460
25	tct ggc tgc ccc ccc gac tcc gac gtt gag tcc tat tct tcc atg ccc Ser Gly Cys Pro Pro Asp Ser Asp Val Glu Ser Tyr Ser Ser Met Pro 2375 2380 2385	7508
30	ccc ctg gag ggg gag cct ggg gat ccg gat ctc agc gac ggg tca tgg Pro Leu Glu Gly Glu Pro Gly Asp Pro Asp Leu Ser Asp Gly Ser Trp 2390 2395 2400 2405	7556
35	tcg acg gtc agt agt ggg gcc gac acg gaa gat gtc gtg tgc tgc tca Ser Thr Val Ser Ser Gly Ala Asp Thr Glu Asp Val Val Cys Cys Ser 2410 2415 2420	7604
40	atg tct tat tcc tgg aca ggc gca ctc gtc acc ccg tgc gct gcg gaa Met Ser Tyr Ser Trp Thr Gly Ala Leu Val Thr Pro Cys Ala Ala Glu 2425 2430 2435	7652
45	gaa caa aaa ctg ccc atc aac gca ctg agc aac tcg ttg cta cgc cat Glu Gln Lys Leu Pro Ile Asn Ala Leu Ser Asn Ser Leu Leu Arg His 2440 2445 2450	7700
50	cac aat ctg gtg tat tcc acc act tca cgc agt gct tgc caa agg cag His Asn Leu Val Tyr Ser Thr Ser Arg Ser Ala Cys Gln Arg Gln 2455 2460 2465	7748
55	aag aaa gtc aca ttt gac aga ctg caa gtt ctg gac agc cat tac cag Lys Lys Val Thr Phe Asp Arg Leu Gln Val Leu Asp Ser His Tyr Gln 2470 2475 2480 2485	7796
60	gac gtg ctc aag gag gtc aaa gca gcg gcg tca aaa gtg aag gct aac Asp Val Leu Lys Glu Val Lys Ala Ala Ser Lys Val Lys Ala Asn 2490 2495 2500	7844
65	ttg cta tcc gta gag gaa gct tgc agc ctg acg ccc cca cat tca gcc Leu Leu Ser Val Glu Glu Ala Cys Ser Leu Thr Pro Pro His Ser Ala 2505 2510 2515	7892
	aaa tcc aag ttt ggc tat ggg gca aaa gac gtc cgt tgc cat gcc aga Lys Ser Lys Phe Gly Tyr Gly Ala Lys Asp Val Arg Cys His Ala Arg 2520 2525 2530	7940
	aag gcc gta gcc cac atc aac tcc gtg tgg aaa gac ctt ctg gaa gac Lys Ala Val Ala His Ile Asn Ser Val Trp Lys Asp Leu Leu Glu Asp 2535 2540 2545	7988
	agt gta aca cca ata gac act acc atc atg gcc aag aac gag gtt ttc Ser Val Thr Pro Ile Asp Thr Thr Ile Met Ala Lys Asn Glu Val Phe 2550 2555 2560 2565	8036
	tgc gtt cag cct gag aag ggg ggt cgt aag cca gct cgt ctc atc gtg	8084

	Cys Val Gln Pro Glu Lys Gly Gly Arg Lys Pro Ala Arg Leu Ile Val		
	2570	2575	2580
5	ttc ccc gac ctg ggc gtg cgc gtg tgc gag aag atg gcc ctg tac gac		8132
	Phe Pro Asp Leu Gly Val Arg Val Cys Glu Lys Met Ala Leu Tyr Asp		
	2585	2590	2595
10	gtg gtt agc aag ctc ccc ctg gcc gtg atg gga agc tcc tac gga ttc		8180
	Val Val Ser Lys Leu Pro Leu Ala Val Met Gly Ser Ser Tyr Gly Phe		
	2600	2605	2610
15	caa tac tca cca gga cag cgg gtt gaa ttc ctc gtg caa gcg tgg aag		8228
	Gln Tyr Ser Pro Gly Gln Arg Val Glu Phe Leu Val Gln Ala Trp Lys		
	2615	2620	2625
	tcc aag aag acc ccg atg ggg ttc tcg tat gat acc cgc tgg ttt gac		8276
	Ser Lys Lys Thr Pro Met Gly Phe Ser Tyr Asp Thr Arg Cys Phe Asp		
	2630	2635	2640
20	tcc aca gtc act gag agc gac atc cgt acg gag gca att tac caa		8324
	Ser Thr Val Thr Glu Ser Asp Ile Arg Thr Glu Glu Ala Ile Tyr Gln		
	2650	2655	2660
25	tgt tgt gac ctg gac ccc caa gcc cgc gtg gcc atc aag tcc ctc act		8372
	Cys Cys Asp Leu Asp Pro Gln Ala Arg Val Ala Ile Lys Ser Leu Thr		
	2665	2670	2675
30	gag agg ctt tat gtt ggg ggc cct ctt acc aat tca agg ggg gaa aac		8420
	Glu Arg Leu Tyr Val Gly Gly Pro Leu Thr Asn Ser Arg Gly Glu Asn		
	2680	2685	2690
35	tgc ggc tac cgc agg tgc cgc agc ggc gta ctg aca act agc tgt		8468
	Cys Gly Tyr Arg Arg Cys Arg Ala Ser Gly Val Leu Thr Thr Ser Cys		
	2695	2700	2705
	ggt aac acc ctc act tgc tac atc aag gcc cgg gca gcc tgt cga gcc		8516
	Gly Asn Thr Leu Thr Cys Tyr Ile Lys Ala Arg Ala Ala Cys Arg Ala		
	2710	2715	2720
40	gca ggg ctc cag gac tgc acc atg ctc gtg tgt ggc gac gac tta gtc		8564
	Ala Gly Leu Gln Asp Cys Thr Met Leu Val Cys Gly Asp Asp Leu Val		
	2730	2735	2740
45	gtt atc tgt gaa agt gcg ggg gtc cag gag gac ggc gcg agc ctg aga		8612
	Val Ile Cys Glu Ser Ala Gly Val Gln Glu Asp Ala Ala Ser Leu Arg		
	2745	2750	2755
50	gcc ttc acg gag gct atg acc agg tac tcc gcc ccc ccc ggg gac ccc		8660
	Ala Phe Thr Glu Ala Met Thr Arg Tyr Ser Ala Pro Pro Gly Asp Pro		
	2760	2765	2770
55	cca caa cca gaa tac gac ttg gag ctt ata aca tca tgc tcc tcc aac		8708
	Pro Gln Pro Glu Tyr Asp Leu Glu Leu Ile Thr Ser Cys Ser Ser Asn		
	2775	2780	2785
	gtg tca gtc gcc cac gac ggc gct gga aag agg gtc tac tac ctt acc		8756
	Val Ser Val Ala His Asp Gly Ala Gly Lys Arg Val Tyr Tyr Leu Thr		
	2790	2795	2800
60	cgt gac cct aca acc ccc ctc gcg aga gcc gcg tgg gag aca gca aga		8804
	Arg Asp Pro Thr Thr Pro Leu Ala Arg Ala Ala Trp Glu Thr Ala Arg		
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65	cac act cca gtc aat tcc tgg cta ggc aac ata atc atg ttt gcc ccc		8852
	His Thr Pro Val Asn Ser Trp Leu Gly Asn Ile Ile Met Phe Ala Pro		
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10 gcc tgc tac tcc ata gaa cca ctg gat cta cct cca atc att caa aga	8996
Ala Cys Tyr Ser Ile Glu Pro Leu Asp Leu Pro Pro Ile Ile Gln Arg	
2870 2875 2880 2885	
15 ctc cat ggc ctc agc gca ttt tca ctc cac agt tac tct cca ggt gaa	9044
Leu His Gly Leu Ser Ala Phe Ser Leu His Ser Tyr Ser Pro Gly Glu	
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Ile Asn Arg Val Ala Ala Cys Leu Arg Lys Leu Gly Val Pro Pro Leu	
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Arg Ala Trp Arg His Arg Ala Arg Ser Val Arg Ala Arg Leu Leu Ser	
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Arg Gly Gly Arg Ala Ala Ile Cys Gly Lys Tyr Leu Phe Asn Trp Ala	
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Val Arg Thr Lys Leu Lys Leu Thr Pro Ile Ala Ala Ala Gly Arg Leu	
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35 40 45	

Thr Arg Lys Thr Ser Glu Arg Ser Gln Pro Arg Gly Arg Arg Gln Pro
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 Ile Pro Lys Ala Arg Arg Pro Glu Gly Arg Thr Trp Ala Gln Pro Gly
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 5 Tyr Pro Trp Pro Leu Tyr Gly Asn Glu Gly Cys Gly Trp Ala Gly Trp
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 Leu Leu Ser Pro Arg Gly Ser Arg Pro Ser Trp Gly Pro Thr Asp Pro
 100 105 110
 10 Arg Arg Arg Ser Arg Asn Leu Gly Lys Val Ile Asp Thr Leu Thr Cys
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 Gly Gly Ala Ala Arg Ala Leu Ala His Gly Val Arg Val Leu Glu Asp
 145 150 155 160
 15 Gly Val Asn Tyr Ala Thr Gly Asn Leu Pro Gly Cys Ser Phe Ser Ile
 165 170 175
 Phe Leu Leu Ala Leu Leu Ser Cys Leu Thr Val Pro Ala Ser Ala Tyr
 180 185 190
 Gln Val Arg Asn Ser Ser Gly Leu Tyr His Val Thr Asn Asp Cys Pro
 20 195 200 205
 Asn Ser Ser Ile Val Tyr Glu Ala Ala Asp Ala Ile Leu His Thr Pro
 210 215 220
 Gly Cys Val Pro Cys Val Arg Glu Gly Asn Ala Ser Arg Cys Trp Val
 225 230 235 240
 25 Ala Val Thr Pro Thr Val Ala Thr Arg Asp Gly Lys Leu Pro Thr Thr
 245 250 255
 Gln Leu Arg Arg His Ile Asp Leu Leu Val Gly Ser Ala Thr Leu Cys
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 Ser Ala Leu Tyr Val Gly Asp Leu Cys Gly Ser Val Phe Leu Val Gly
 30 275 280 285
 Gln Leu Phe Thr Phe Ser Pro Arg Arg His Trp Thr Thr Gln Asp Cys
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 Asn Cys Ser Ile Tyr Pro Gly His Ile Thr Gly His Arg Met Ala Trp
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 35 Asp Met Met Met Asn Trp Ser Pro Thr Ala Ala Leu Val Val Ala Gln
 325 330 335
 Leu Leu Arg Ile Pro Gln Ala Ile Met Asp Met Ile Ala Gly Ala His
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 Trp Gly Val Leu Ala Gly Ile Ala Tyr Phe Ser Met Val Gly Asn Trp
 40 355 360 365
 Ala Lys Val Leu Val Val Leu Leu Phe Ala Gly Val Asp Ala Glu
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 Thr His Val Thr Gly Gly Asn Ala Gly Arg Thr Thr Ala Gly Leu Val
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 45 Gly Leu Leu Thr Pro Gly Ala Lys Gln Asn Ile Gln Leu Ile Asn Thr
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 Phe Ala Gln Gly Trp Gly Pro Ile Ser Tyr Ala Asn Gly Ser Gly Leu
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 Trp Gly Ala Asn Asp Thr Asp Val Phe Val Leu Asn Asn Thr Arg Pro
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 65 Thr Lys Val Cys Gly Ala Pro Pro Cys Val Ile Gly Gly Val Gly Asn
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Asn Thr Leu Leu Cys Pro Thr Asp Cys Phe Arg Lys His Pro Glu Ala
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 Thr Tyr Ser Arg Cys Gly Ser Gly Pro Trp Ile Thr Pro Arg Cys Met
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 5 Val Asp Tyr Pro Tyr Arg Leu Trp His Tyr Pro Cys Thr Ile Asn Tyr
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 10 Glu Ala Ala Cys Asn Trp Thr Arg Gly Glu Arg Cys Asp Leu Glu Asp
 645 650 655
 Arg Asp Arg Ser Glu Leu Ser Pro Leu Leu Ser Thr Thr Gln Trp
 660 665 670
 Gln Val Leu Pro Cys Ser Phe Thr Thr Leu Pro Ala Leu Ser Thr Gly
 675 680 685
 15 Leu Ile His Leu His Gln Asn Ile Val Asp Val Gln Tyr Leu Tyr Gly
 690 695 700
 Val Gly Ser Ser Ile Ala Ser Trp Ala Ile Lys Trp Glu Tyr Val Val
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 20 Leu Leu Phe Leu Leu Ala Asp Ala Arg Val Cys Ser Cys Leu Trp
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 Met Met Leu Leu Ile Ser Gln Ala Glu Ala Ala Leu Glu Asn Leu Val
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 Ile Leu Asn Ala Ala Ser Leu Ala Gly Thr His Gly Leu Val Ser Phe
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 25 Leu Val Phe Phe Cys Phe Ala Trp Tyr Leu Lys Gly Arg Trp Val Pro
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 35 Phe Leu Thr Arg Val Glu Ala Gln Leu His Val Trp Val Pro Pro Leu
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 865 870 875 880
 His Pro Thr Leu Val Phe Asp Ile Thr Lys Leu Leu Leu Ala Ile Phe
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 40 Gly Pro Leu Trp Ile Leu Gln Ala Ser Leu Leu Lys Val Pro Tyr Phe
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 Val Arg Val Gln Gly Leu Leu Arg Ile Cys Ala Leu Ala Arg Lys Ile
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 45 Ala Gly Gly His Tyr Val Gln Met Ala Ile Ile Lys Leu Gly Ala Leu
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 Thr Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala
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 50 His Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe
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 65 Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
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Asp Gln Asp Leu Val Gly Trp Pro Ala Pro Gln Gly Ser Arg Ser Leu
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 30 1330 1335 1340
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 15 Val Ile Thr Pro Ala Val Gln Thr Asn Trp Gln Lys Leu Glu Val Phe
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 1825 1830 1835 1840
 Ser Val Gly Leu Gly Lys Val Leu Val Asp Ile Leu Ala Gly Tyr Gly
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 Ala Gly Val Ala Gly Ala Leu Val Ala Phe Lys Ile Met Ser Gly Glu
 30 1860 1865 1870
 Val /Pro Ser Thr Glu Asp Leu Val Asn Leu Leu Pro Ala Ile Leu Ser
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 Pro Gly Ala Leu Val Val Gly Val Val Cys Ala Ala Ile Leu Arg Arg
 1890 1895 1900
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 Ala Phe Ala Ser Arg Gly Asn His Val Ser Pro Thr His Tyr Val Pro
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 Primer

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